

IN THE SPECIFICATION

Please amend the specification by replacing the last paragraph, on page 1, through line 1, on page 2, with the following:

--The process for converting hydrocarbons at a high temperature such as steam-cracking or alternatively catalytic cracking, provide unsaturated hydrocarbons such as for example, ethylene, propylene, butadiene, ~~butanes~~ butene; saturated alkanes such as ethane, propane, butane, as well as lighter compounds such as methane, hydrogen and carbon monoxide, and hydrocarbons boiling in the gasoline range. Thus, the gaseous monoolefinic hydrocarbons with two or more carbon atoms, obtained by these processes also contain a considerable amount of hydrocarbons of greater unsaturation degree, i.e. acetylenes and diolefins. In general, the mainly olefin-containing process stream from these processes contains 0.5%-5.3% of acetylenes and diolefins. Acetylenes and diolefins could reduce the activity of the polymerization catalyst and weaken the physical properties of the polymer. Therefore, only after reducing the contents of acetylenes and diolefins below a definite value, can this gaseous monoolefin be used as monomers useful for ~~synthesising~~ synthesizing polymers or copolymers.--

Please amend the specification by replacing the last paragraph, on page 4, through line 4, on page 5, with the following:

--1. Because of the mixed phase ~~hydrogenation~~ hydrogenation reactor being located at the downstream side of the front depropanizer, the cooled and partially condensed stream rich in C₃ and lighter components passing through the mixed phase hydrogenation reactor, said process can only hydrogenate the lower unsaturated hydrocarbons, but not be able to hydrogenate the greater unsaturated hydrocarbons such as butyne, butadiene etc, thus the amount of hydrogen consumed is limited and a large amount of remaining hydrogen passes into the cryogenic section where the energy consumption being higher. 2. In said patent application, because of the stream, before passing through the front depropanizer, being not hydrotreated, the alkynes and diolefins in the stream are easy to form equipment fouling, thus increase the energy consumption. 3. When said patent application being employed, a series of units must be attached to perform respectively the additional treatments of the separated C₃ and higher components for acetylenes and diolefins removal, so the equipment cost and energy consumption of the production, taken as a whole, would be increased.--

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Please amend the specification by replacing the paragraph, on page 5, under the heading "Brief Description of the Drawings", with the following:

--Fig. 1 is a flow diagram of a preferred embodiment of the present invention.--

Please amend the specification by replacing the first paragraph, on page 6, with the following:

--Accordingly, the present invention provides a process for treating a feed stream comprising a component selected from the group consisting of hydrogen, carbon monoxide, methane, acetylene, ethylene, ethane, propylene, propane, methylacetylene, propadiene, butene, butane, butyne, butadiene, C₅, C₆, benzene, toluene, mixture of C₈, C₉ and C₁₀, [[or]] and mixtures thereof, the process comprising the following steps in sequence:--

Please amend the specification by replacing lines 5-6, on page 9, with the following:

--d. passing the effluent from the mixed phase phase hydrogenation reactor [24] in step [c], through a cooler to cool said effluent;--

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Please amend the specification by replacing the last paragraph, on page 10, with the following:

--Any catalyst well known in the art of selective hydrogenation can be employed in the mixed phase or vapor phase hydrogenation reactors of the present invention. The Group VIII metal hydrogenation catalyst is the most commonly used and presently preferred. The Group VIII metal hydrogenation catalyst is generally includes a support such as alumina. A kind of catalyst that has been used successfully contains about 0.1 wt.%-about 1 wt.% of Group VIII metal impregnated, by the total weight of the catalyst. These and other catalysts are more fully disclosed in some literatures. The examples disclosed in the prior art are: as concerns the support, most of selectively hydrogenation catalysts for acetylenes and diolefins are the alumina-supported Palladium catalysts, see US 3,679,762 and US 4,762,956; titanium oxide-supported Palladium catalyst in US 4,839,329; silicon oxide-supported palladium-Zinc catalyst in DE-A 2,156,544; calcium carbonate-supported Palladium-Lead catalyst; and cellular iolite (containing alkali metal and/or alkali-earth metal)-supported Palladium catalyst in CN 1176291A. As concerns the active component of the catalyst in the prior art, also included are palladium catalyst with the addition of a promotor: the promotor disclosed in US 4,404,124 is silver; that in EP-A 892252 is Gold; that in DE-A 1,284,403 and US 4,577,047 is chromium; that in US 3,912,789 is ~~copper~~ copper; that in US 3,900,526 is iron; that in US 3,489,809 is Rhodium; that in US 3,325,556 is lithium; and that in CN 1151908A is Potassium. Furthermore, also disclosed are the compositions and processes for

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acetylenes and diolefins selective hydrogenation catalyst in US 4,571,442; US 4,347,392; US 4,128,595; US 5,059,732 and US 5,414,170.-

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Please amend the specification by replacing the **first** paragraph, on page 12, with the following:

--According to the technical solution of the present invention, the ~~device~~ device [27] may be the front depropanizer or the front deethanizer. It belongs to the front depropanizing separation flow route in case of the front depropanizer, and to the front deethanizing separation flow route in case of the front deethanizer.--

Please amend the specification by replacing the **second** paragraph, on page 12, with the following:

--~~Surprisingly~~ Surprisingly, the present inventors have found that by installing a mixed phase hydrogenation reactor at the upstream side of the front depropanizer or the front deethanizer, and recycling the liquid process stream from the front depropanizer or the front deethanizer to the mixed phase hydrogenation reactor, not only the advantage of washing and cooling the mixed phase hydrogenation reactor with the liquid derived from the front depropanizer or the deethanizer in the prior art can be maintained, but also greatly extending the hydrogenation range to selectively hydrogenate the C₂-C₁₀ greater unsaturated hydrocarbon including acetylene.--

Please amend the specification by replacing the **last** paragraph, on page 12, through line 8, on page 13, with the following:

--In the present invention, the liquid process stream from the front depropanizer bottom (mainly C₄, C₅ fractions and some C₆ and heavier fractions of cracked gasoline) or that from the front deethanizer bottom (~~mainly~~ mainly C₃, C₄, C₅ fractions and some C₆ and heavier fractions of cracked gasoline) is recycled to the mixed phase hydrogenation reactor, providing the liquid washing and cooling effect; the liquid phase C₃, C₄ and C₅ fractions partially vaporizes at the condition of the mixed phase reaction, a large amount of reaction heat is removed; the reactor can simulate[[s]] an isothermal reactor, providing improved selectivity and safety of hydrogenation and improved service life of the catalyst.--

Please amend the specification by replacing the last paragraph, on page 13, under the heading "Example 1", through the last line on page 14, with the following:

--Referring to Fig. 1, a vapor phase olefin-containing feed stream from a steam pyrolysis facility in line 1 was mixed in line 2 with the liquid stream from the bottom of the front depropanizer in line 22, then heat exchanged in heat exchanger 23, and fed through line 3 into mixed phase hydrogenation reactor 24. The mixed phase hydrogenation reactor 24 operated at a relatively low temperature range (about 30°-80°C) and relatively moderate pressure range (about 1.0-2.0MPa), in the presence of BC-L-83A hydrogenation catalyst (Pd content 0.28 wt%, Ag content 0.48wt.%, Al₂O₃ as the support, manufactured by Beijing Research Institute of Chemical Industry, China Petrochemical Corp.). The reaction product from the mixed phase

hydrogenation reactor was cooled through cooler 25 and cooler 26, passed into a front depropanizer 27, and separated into a liquid stream and a vapor stream. A portion of the liquid phase stream rich in C₄ components from the front depropanizer 27, through line 22 recycled to the upstream of the mixed phase hydrogenation reactor, the other portion through line 21 passed into the debutanizer. The vapor phase separated from the front depropanizer was withdrawn from line 7, heated in heat exchangers 29, 30, then directed through line 9 to compressor 31. The vapor effluent from the compressor 31 passed through line 10 into cooler 32. The cooled vapor phase passed through line 11 into vapor phase hydrogenation reactor 33. The vapor phase hydrogenation catalyst was BC-H-22A (Pd content 0.03wt.%, Ag content, 0.12wt. %, Al₂O₃ as the ~~surriptor~~ supporter, manufactured by Beijing Research Institute of Chemical Industry, China Petrochemical Corp.), the temperature and pressure of the vapor phase hydrogenation reactor 33 were sufficient to complete the hydrogenation of substantially all of the ~~acetyliens~~ acetylenes contained in the stream fed to the vapor phase hydrogenation reactor. Generally, the hydrogenation temperature is 30°C-200°C, hydrogenation pressure is 1.0-4.0MPa. The effluent from the vapor phase hydrogenation reactor passed through line 12 into heat exchanger 34 to cool, the resulting gas-liquid stream was separated into gas stream and liquid stream in separator 35, recycled a portion of the liquid stream as a reflux liquid of the front depropanizer through line 17 to the top of the front depropanizer, passed the other portion of the liquid stream through line 16, the vapor phase through line 14 into a demethanizer and/or deethanizer at the downstream of

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the cooler, and other separation units for further separating the other components.--